

Date: Sat, 9 Apr 94 04:30:43 PDT
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@UCSD.Edu
Reply-To: Ham-Space@UCSD.Edu
Precedence: Bulk
Subject: Ham-Space Digest V94 #85
To: Ham-Space

Ham-Space Digest Sat, 9 Apr 94 Volume 94 : Issue 85

Today's Topics:

 Building Sat antennas (2 msgs)
 Greenland to Maryland?
 Motorola GPS engine group purchase update
 ORBS\$098.MICRO.AMSAT
 ORBS\$098.OSCAR.AMSAT
 SatTrack
 STS-59 SAREX Flight Information

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 8 Apr 94 15:28:09 GMT
From: agate!howland.reston.ans.net!vixen.cso.uiuc.edu!usenet.ucs.indiana.edu!
indyvax.iupui.edu!medicine.dmed.iupui.edu!JAY@ucbvax.berkeley.edu
Subject: Building Sat antennas
To: ham-space@ucsd.edu

I am new to satelite communications. (This is just a warning!)

I would like to build a 2m & a 70cm beam for use with satelites. Does anyone
know of an article in QST or some other plan for such antennas?

Date: 8 Apr 94 22:49:40 GMT
From: agate!dog.ee.lbl.gov!ihnp4.ucsd.edu!swrinde!gatech!europa.eng.gtefsd.com!
darwin.sura.net!fconvx.ncifcrf.gov!mack@ucbvax.berkeley.edu

Subject: Building Sat antennas
To: ham-space@ucsd.edu

In article <JAY.17.2DA57809@medicine.dmed.iupui.edu> JAY@medicine.dmed.iupui.edu (Jay Sissom) writes:

>I am new to satellite communications. (This is just a warning!)

>

>I would like to build a 2m & a 70cm beam for use with satellites. Does anyone
>know of an article in QST or some other plan for such antennas?

Get the ARRL &/or RSGB antenna handbooks. The calculations for a helix are trivial. They are wideband and non-critical in dimensions, unlike a yagi.

However people don;t build them at 2m very often - they are more often used at UHF . I don't really know why but here are some guesses

A 2m helix is large and hard to support (rods out from the center pole to the helix are long).

It isn't 50 ohms. Itsa bout 140ohms and there are tricks to make it 50ohms but these are narrow band (still wide band by ham band standards) and a little tricky to get going.

Maybe you can make more money by selling a yagi than a helix.

It would beinteresting to find out the real reason, but most people if they want a fair bit of gain at 2m and 432 and want circular polarisation they use crossed beams 1/4lambda apart

>From what I understand, a normal 2m or 70cm beam antenna would work, but a
>circular polorization would be much better. I have no idea how one would
>build a circular polorized antenna.

>

>Thanks

>Jay KA90KT

>

Joe Mack
NA3T
mack@ncifcrf.gov

Date: Fri, 8 Apr 1994 12:16:19 GMT
From: ihnp4.ucsd.edu!mvb.saic.com!news.cerf.net!usc!howland.reston.ans.net!torn!
nott!cunews!freenet.carleton.ca!FreeNet.Carleton.CA!ae517@network.ucsd.edu
Subject: Greenland to Maryland?
To: ham-space@ucsd.edu

In a previous article, mitchell@aol14.wff.nasa.gov (Richard Mitchell 1026) says:

>Based on the great experiences of everyone here, what are the
>chances that someone in Thule, Greenland would have to talk
>to someone in Maryland via 2m/70cm satellite? Is there one
>that would be in range at both places at the same time (for
>more than, say, 2 seconds)? Is Thule too far north for anything?
>What about packet?

I assume you are speaking of mode B (or mode J, for that matter)
satellites other than AO-10 and AO-13, which should fill your requirements
quite nicely.

Well, all of the packet satellites should work just fine. I recall seeing
ve8dx up in Pond Inlet on the K0-23 queue. He's roughly the same
latitude, give or take a few degrees. I think I've even heard him on RS-10.

73 de va3rr/aa8lu

--

Date: 9 Apr 94 02:07:05 GMT
From: agate!howland.reston.ans.net!gatech!news.byu.edu!news.mtholyoke.edu!
uhog.mit.edu!grapevine.lcs.mit.edu!chaos.dac.neu.edu!lynx.dac.neu.edu!not-for-
mail@ucbvax.berkeley.edu
Subject: Motorola GPS engine group purchase update
To: ham-space@ucsd.edu

I too may be interested in this purchase....please email me with info on
the
price when you get it.

N1ILY

--

Jeffrey Perry
j.perry@lynx.dac.neu.edu

Date: 8 Apr 94 05:12:00 GMT
From: agate!howland.reston.ans.net!cs.utexas.edu!utnut!utcsri!
newsflash.concordia.ca!canopus.cc.umanitoba.ca!tribune.usask.ca!
kakwa.ucs.ualberta.ca!quartz.ucs.ualberta.ca!alberta!ve6mgs!usenet@@.

Subject: ORBS\$098.MICRO.AMSAT
To: ham-space@ucsd.edu

SB KEPS @ AMSAT \$ORBS-098.D
Orbital Elements 098.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM WA5QGD FORT WORTH, TX April 8, 1994
BID: \$ORBS-098.D
TO ALL RADIO AMATEURS BT

Satellite: UO-14
Catalog number: 20437
Epoch time: 94094.18864115
Element set: 978
Inclination: 98.5904 deg
RA of node: 179.9647 deg
Eccentricity: 0.0011994
Arg of perigee: 50.9587 deg
Mean anomaly: 309.2663 deg
Mean motion: 14.29834719 rev/day
Decay rate: 6.3e-07 rev/day^2
Epoch rev: 21901
Checksum: 351

Satellite: AO-16
Catalog number: 20439
Epoch time: 94093.26738149
Element set: 778
Inclination: 98.6001 deg
RA of node: 180.2108 deg
Eccentricity: 0.0012270
Arg of perigee: 53.9212 deg
Mean anomaly: 306.3104 deg
Mean motion: 14.29889216 rev/day
Decay rate: 7.6e-07 rev/day^2
Epoch rev: 21889
Checksum: 309

Satellite: DO-17
Catalog number: 20440
Epoch time: 94093.71879587
Element set: 777
Inclination: 98.5997 deg
RA of node: 180.9543 deg
Eccentricity: 0.0012412
Arg of perigee: 51.3730 deg
Mean anomaly: 308.8563 deg

Mean motion: 14.30028150 rev/day
Decay rate: 5.8e-07 rev/day²
Epoch rev: 21897
Checksum: 330

Satellite: W0-18
Catalog number: 20441
Epoch time: 94094.25256090
Element set: 779
Inclination: 98.6007 deg
RA of node: 181.4888 deg
Eccentricity: 0.0013013
Arg of perigee: 50.7174 deg
Mean anomaly: 309.5160 deg
Mean motion: 14.30003284 rev/day
Decay rate: 4.9e-07 rev/day²
Epoch rev: 21905
Checksum: 288

Satellite: L0-19
Catalog number: 20442
Epoch time: 94093.74592051
Element set: 777
Inclination: 98.6010 deg
RA of node: 181.2260 deg
Eccentricity: 0.0013246
Arg of perigee: 51.9430 deg
Mean anomaly: 308.2937 deg
Mean motion: 14.30098281 rev/day
Decay rate: 6.0e-07 rev/day²
Epoch rev: 21899
Checksum: 297

Satellite: U0-22
Catalog number: 21575
Epoch time: 94096.62196308
Element set: 480
Inclination: 98.4392 deg
RA of node: 172.5493 deg
Eccentricity: 0.0008170
Arg of perigee: 138.1574 deg
Mean anomaly: 222.0255 deg
Mean motion: 14.36905377 rev/day
Decay rate: 1.04e-06 rev/day²
Epoch rev: 14280
Checksum: 303

Satellite: K0-23

Catalog number: 22077
Epoch time: 94093.90979456
Element set: 374
Inclination: 66.0795 deg
RA of node: 75.4986 deg
Eccentricity: 0.0012237
Arg of perigee: 305.4986 deg
Mean anomaly: 54.4889 deg
Mean motion: 12.86285631 rev/day
Decay rate: -3.7e-07 rev/day²
Epoch rev: 7723
Checksum: 354

Satellite: A0-27
Catalog number: 22825
Epoch time: 94095.20620110
Element set: 275
Inclination: 98.6598 deg
RA of node: 171.7361 deg
Eccentricity: 0.0009638
Arg of perigee: 62.0236 deg
Mean anomaly: 298.1903 deg
Mean motion: 14.27616610 rev/day
Decay rate: 4.8e-07 rev/day²
Epoch rev: 2727
Checksum: 304

Satellite: I0-26
Catalog number: 22826
Epoch time: 94094.70192756
Element set: 275
Inclination: 98.6593 deg
RA of node: 171.2616 deg
Eccentricity: 0.0010140
Arg of perigee: 64.2606 deg
Mean anomaly: 295.9612 deg
Mean motion: 14.27719595 rev/day
Decay rate: 5.2e-07 rev/day²
Epoch rev: 2720
Checksum: 312

Satellite: K0-25
Catalog number: 22830
Epoch time: 94093.74818451
Element set: 278
Inclination: 98.5599 deg
RA of node: 168.3571 deg
Eccentricity: 0.0012553

Arg of perigee: 37.4701 deg
Mean anomaly: 322.7354 deg
Mean motion: 14.28044298 rev/day
Decay rate: 5.9e-07 rev/day^2
Epoch rev: 2707
Checksum: 325

/EX

Date: 8 Apr 94 05:09:00 GMT
From: agate!howland.reston.ans.net!cs.utexas.edu!utnut!utcsri!
newsflash.concordia.ca!canopus.cc.umanitoba.ca!tribune.usask.ca!
kakwa.ucs.ualberta.ca!quartz.ucs.ualberta.ca!alberta!ve6mgs!usenet@@.
Subject: ORBS\$098.OSCAR.AMSAT
To: ham-space@ucsd.edu

SB KEPS @ AMSAT \$ORBS-098.0
Orbital Elements 098.OSCAR

HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM WA5QGD FORT WORTH,TX April 8, 1994
BID: \$ORBS-098.0
TO ALL RADIO AMATEURS BT

Satellite: AO-10
Catalog number: 14129
Epoch time: 94093.93015575
Element set: 273
Inclination: 27.1781 deg
RA of node: 334.0078 deg
Eccentricity: 0.6020533
Arg of perigee: 167.5108 deg
Mean anomaly: 219.1680 deg
Mean motion: 2.05877978 rev/day
Decay rate: -1.05e-06 rev/day^2
Epoch rev: 8125
Checksum: 301

Satellite: UO-11
Catalog number: 14781
Epoch time: 94096.58268703
Element set: 679
Inclination: 97.7904 deg
RA of node: 114.6531 deg
Eccentricity: 0.0012422
Arg of perigee: 134.3680 deg

Mean anomaly: 225.8545 deg
Mean motion: 14.69185628 rev/day
Decay rate: 3.27e-06 rev/day^2
Epoch rev: 53979
Checksum: 341

Satellite: RS-10/11
Catalog number: 18129
Epoch time: 94096.18122248
Element set: 887
Inclination: 82.9274 deg
RA of node: 22.0643 deg
Eccentricity: 0.0010248
Arg of perigee: 220.6223 deg
Mean anomaly: 139.4177 deg
Mean motion: 13.72334834 rev/day
Decay rate: 6.7e-07 rev/day^2
Epoch rev: 34003
Checksum: 288

Satellite: A0-13
Catalog number: 19216
Epoch time: 94091.48205291
Element set: 898
Inclination: 57.8647 deg
RA of node: 260.1651 deg
Eccentricity: 0.7210810
Arg of perigee: 338.2200 deg
Mean anomaly: 2.3008 deg
Mean motion: 2.09726624 rev/day
Decay rate: -4.61e-06 rev/day^2
Epoch rev: 4440
Checksum: 282

Satellite: F0-20
Catalog number: 20480
Epoch time: 94093.91224327
Element set: 673
Inclination: 99.0286 deg
RA of node: 259.8058 deg
Eccentricity: 0.0541198
Arg of perigee: 147.6860 deg
Mean anomaly: 215.8633 deg
Mean motion: 12.83224718 rev/day
Decay rate: -4.3e-07 rev/day^2
Epoch rev: 19460
Checksum: 323

Satellite: A0-21
Catalog number: 21087
Epoch time: 94096.76922921
Element set: 451
Inclination: 82.9460 deg
RA of node: 195.5516 deg
Eccentricity: 0.0033925
Arg of perigee: 284.0542 deg
Mean anomaly: 75.6843 deg
Mean motion: 13.74537051 rev/day
Decay rate: 9.3e-07 rev/day^2
Epoch rev: 15977
Checksum: 326

Satellite: RS-12/13
Catalog number: 21089
Epoch time: 94095.92841184
Element set: 677
Inclination: 82.9188 deg
RA of node: 65.0333 deg
Eccentricity: 0.0028619
Arg of perigee: 312.8771 deg
Mean anomaly: 46.9979 deg
Mean motion: 13.74038159 rev/day
Decay rate: 3.4e-07 rev/day^2
Epoch rev: 15872
Checksum: 348

Satellite: ARSENE
Catalog number: 22654
Epoch time: 94089.09349977
Element set: 248
Inclination: 1.5156 deg
RA of node: 104.5135 deg
Eccentricity: 0.2923641
Arg of perigee: 175.5080 deg
Mean anomaly: 188.1427 deg
Mean motion: 1.42202601 rev/day
Decay rate: -1.05e-06 rev/day^2
Epoch rev: 7
Checksum: 273

/EX

Date: 8 Apr 94 22:52:41 GMT
From: agate!dog.ee.lbl.gov!ihnp4.ucsd.edu!galaxy.ucr.edu!library.ucla.edu!

europa.eng.gtefsd.com!darwin.sura.net!fconvx.ncifcrf.gov!mack@ucbvax.berkeley.edu
Subject: SatTrack
To: ham-space@ucsd.edu

In article <1994Apr4.203441.4071@news.vanderbilt.edu>
HEAGYWS@ctrvax.Vanderbilt.Edu () writes:
>I'm sorta new to this sat. tracking stuff but am trying to get a
>handle on it. A friend gave me a shareware copy of SatTrack to
>try out. The data file seems very old. Does anyone know where
>I could get up to data data files for SatTrack?

Use your nearestarchie server. Ask someone who understands the network
on your local node or go

manarchie

at the prompt (if you're on a unix machine)

Joe Mack
NA3T
mack@ncifcrf.gov

Date: 7 Apr 94 18:46:29 GMT
From: agate!howland.reston.ans.net!cs.utexas.edu!utnut!utcsri!
newsflash.concordia.ca!canopus.cc.umanitoba.ca!tribune.usask.ca!
kakwa.ucs.ualberta.ca!quartz.ucs.ualberta.ca!alberta!ve6mgs!usenet@@.
Subject: STS-59 SAREX Flight Information
To: ham-space@ucsd.edu

SB SAREX @ AMSAT \$STS-59.002
STS-59 SAREX Flt Info

Launch of next SAREX mission imminent

The next Shuttle Amateur Radio Experiment (SAREX) mission is ready for launch at the Kennedy Space Center in Florida. This flight, designated STS-59, is scheduled for launch on Friday April 8 at 12:06 UTC. Weather conditions could cause the launch to move forward or back by one hour. STS-59 will carry Jay Apt, N5QWL and Linda Godwin, N5RAX on a nine day mission which will include packet radio and some voice operations. A SAREX fact sheet, courtesy of Jay Apt, the ARRL and AMSAT follows. Note that during this mission, the JSC ARC, W5RRR, expects to retransmit NASA Select audio on A0-13. The planned downlink frequency will be 145.84 MHz. In addition the JSC ARC crew in Houston have set up a dial-in BBS which is now in operation. Orbital elements will be available on this machine

throughout the mission. The phone number for the BBS is (713) 244-5625.
Please use 9600 baud or less.

SAREX FACT SHEET - STS-59

WHO: Space Shuttle Endeavour crew

WHAT: Talk via Amateur Radio with students and radio amateurs on Earth.

WHERE: Earth Orbit. Altitude 220 kilometers, with radio coverage in latitudes from 70 degrees North to 70 degrees South. This flight is in one of the lowest altitude orbits ever flown by the shuttle, so pass times will be shorter than usual.

OPERATORS: Dr. Jay Apt (N5QWL) and Dr. Linda Godwin N5RAX.

N5QWL is the commander of the Blue Shift aboard Endeavour and will operate the shuttle systems during the "night" shift, while N5RAX is the Payload Commander, responsible for overall operation of three large radars in the shuttle's cargo bay during the "day" shift.

WHEN: April 8, 1994 at 12:06 UTC (9 day mission)

WHY: As part of the Shuttle Amateur Radio EXperiment (SAREX) component of the STS-59 mission.

SPONSORS: The American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA).

SAREX MODES: FM Voice and Packet
VOICE CALL SIGNS: N5QWL and N5RAX
PACKET CALL SIGN: W5RRR-1

SAREX RADIO FREQUENCIES:

Voice Downlink: (Worldwide) 145.55 MHz
Voice Uplink: 144.91, 144.93, 144.95, 144.97, 144.99 MHz
Voice Uplink: (Europe only) 144.70, 144.75, 144.80 MHz
Packet Downlink: 145.55 MHz
Packet Uplink: 144.49 MHz

Successful QSOs on voice will be facilitated by using standard international phonetics for your call sign.

The crew not answer any stations using non-standard phonetics. Use your entire call sign -- the crew logs with an audio tape recorder. Do not use the Shuttle call sign -- passes are very short, and the crew wants to work as many folks as possible.

If you can, decrease your radio's deviation to 3 KHz (most are initially set at 5 KHz) and compensate for the Doppler shift. If you cannot, wait until a minute or 90 seconds after the Shuttle comes over your horizon to transmit -- that will put you within the SAREX IF. The above applies to both voice and packet.

INFORMATION: Goddard Amateur Radio Club, Greenbelt, MD, WA3NAN. SAREX news and NASA Mission audio retransmissions on 3.86, 7.185, 14.295, 21.395, and 28.65 MHz and on VHF at 147.45 MHz.

Johnson Space Center Amateur Radio Club, Houston, TX, W5RRR. SAREX news bulletins on HF bands at 3.850, 7.227, 14.280, 21.350, and 28.400 MHz and VHF at 146.64 MHz. Also 145.84 on AO-13 at times

ARRL, Newington, CT, W1AW. SAREX news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and VHF at 147.555 MHz.

PARTICIPATING

SCHOOLS: Ealy Elementary School, West Bloomfield, MI
Kanawha Elementary School Davisville, WV
Alcatel Amateur Radio Association and Circle 10 Council-BSA
Richardson, TX
Anthony Elementary, Anthony, KS
St. Bernard High School, Playa Del Rey, CA
Country Club School, San Ramon, CA 94583
Deep Creek Middle School, Baltimore, MD 21221
Paltamo Senior High School, Paltamo Finland
Ogilvie School, Northampton, Western Australia

OPERATIONS NOTES:

If you have a packet QSO number issued to you by the robot, don't try to get another one! The on-board program drops the duplicates anyhow, and all you are doing is making it harder for the other folks. A QSL card will be issued if you appear in the "heard" list on the TNC.

N5QWL will be asleep over most USA passes, and N5RAX will be busy with assigned duties for most daylight US passes, so if the sun is up, try SAREX on packet. The Shuttle crew will try to work voice (1) when we are not otherwise engaged, and (2) at night or when the ground is cloudy (we are generally busy taking pictures of the Earth during clear daylight passes).

If Jay Apt can get to it, he will activate the SAREX about 3 hours into the mission.

QSL via: ARRL, ATTN: STS-59 QSLs, 225 Main Street, Newington, CT 06111, USA. Include a self-addressed stamped envelope (SASE). Non-US stations include a self addressed envelope with \$0.50 of US postage affixed or appropriate IRCs. Include the Callsign worked, Date, UTC, Mode, and Frequency. For packet contacts, include the QSO number issued by the robot. SWL QSL's: Include the Callsign heard, Date, UTC, Mode, and Frequency.

STS-59 Keplerian elements for a 12:06 UTC launch:

STS-59

1	00059U	94098.74878017	.00221188	00000-0	11303-3	0	80	
2	00059	57.0053	277.0416	0009259	269.9963	90.0094	16.19806752	54

Satellite: STS-59

Catalog number: 00059

Epoch time: 94098.74878017 = (08 APR 94 17:58:14.61 UTC)

Element set: 008

Inclination: 57.0053 deg

RA of node: 277.0416 deg

Eccentricity: .0009259

Arg of perigee: 269.9963 deg

Mean anomaly: 90.0094 deg

Mean motion: 16.19806752 rev/day

Decay rate: 2.21188e-03 rev/day^2

Epoch rev: 5

Checksum: 325

Space Shuttle Flight STS-59
Prelaunch Element set JSC-008
Launch: 08 APR 94 12:06 UTC

G. L. Carman

NASA Johnson Space Center

Submitted by Frank Bauer, KA3HDO for the SAREX Working Group

/EX

Date: (null)

From: (null)
Thanks
Jay KA9OKT

End of Ham-Space Digest V94 #85
